Lower East Coast Regional Water Supply Plan

Jim Jackson, Project Manager September 4, 2003

Water Managemen

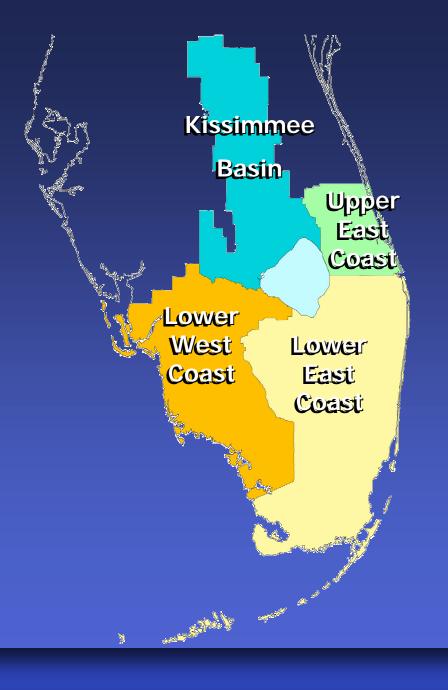


Water Supply Plan Requirements Ch. 373 F.S.

- 20 year Planning Period
- 1-in-10 Level of Certainty
- Water Resource Development
 - schedules, costs, funding strategies
- Water Supply Development
 - options, effectiveness, estimated cost
- Minimum Flows and Levels (MFLs)
 - recovery and prevention strategies
- **Five Year Updates**

SFWMD Planning Regions

- Lower East Coast
- Lower West Coast
- Upper East Coast
- Kissimmee Region



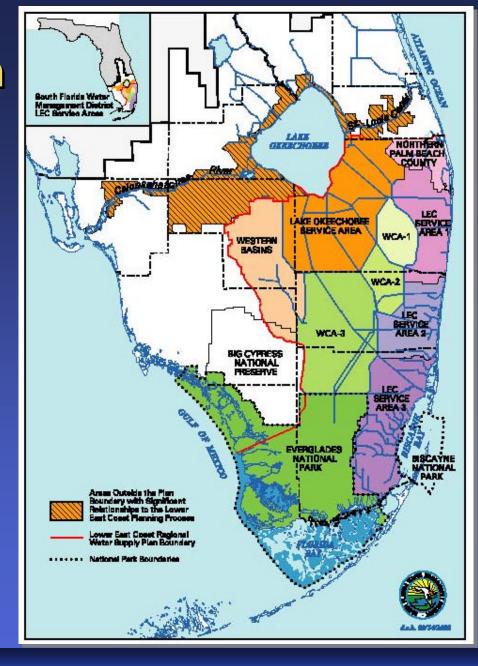
LEC Planning Region

Study area contains:

- ~ 9,000 sq. mi.
- 1995 population 4,756,000
- 2020 population 6,952,000

Includes:

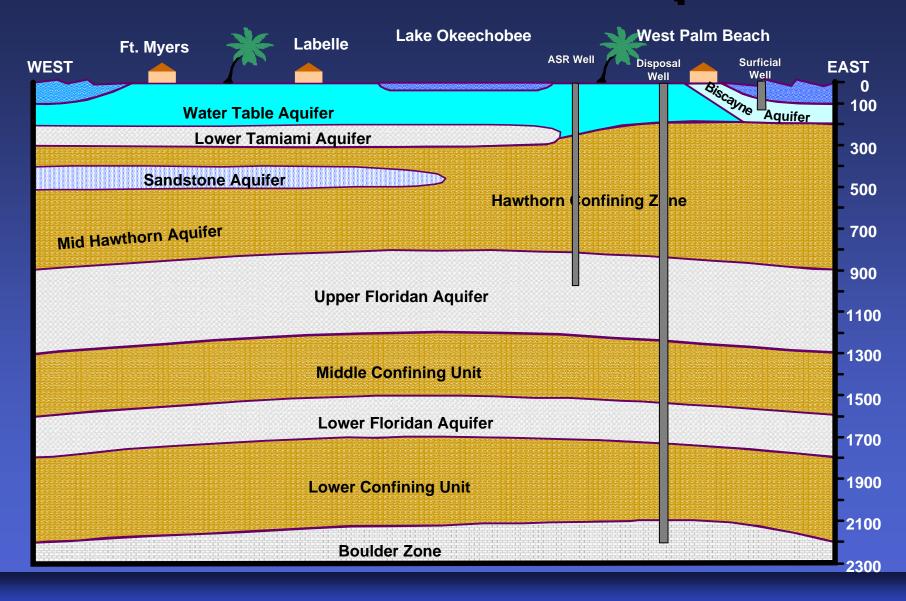
- **Miami-Dade County**
- **■** Broward County
- Palm Beach County
- Most of Monroe County
- Parts of Lee, Collier, Hendry, Glades, Martin & Okeechobee counties



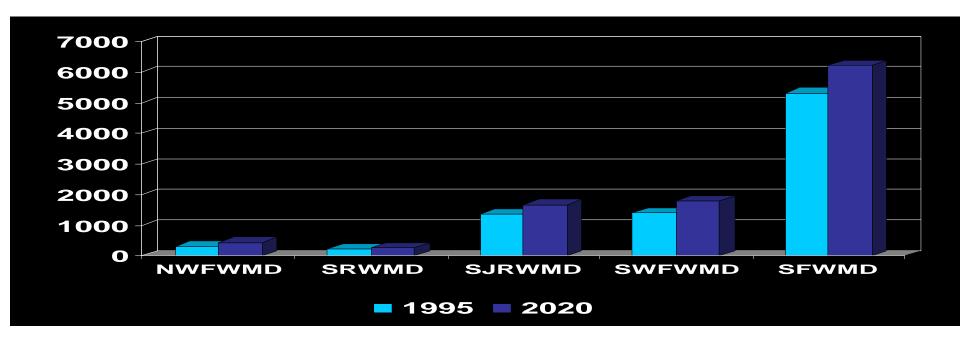
VOLUSIA 82° CITRUS NANDO ORANGE PASCO Tampa INDIAN MANATEE HARDEE HIGH CHOBER LANDS 3 MARTIN CHAR-CLADES HENDRY PALM BEAC **Boca Raton** Pompano Beac Fort Lauderdale Miami Beach Florida Keys

Biscayne Aquifer

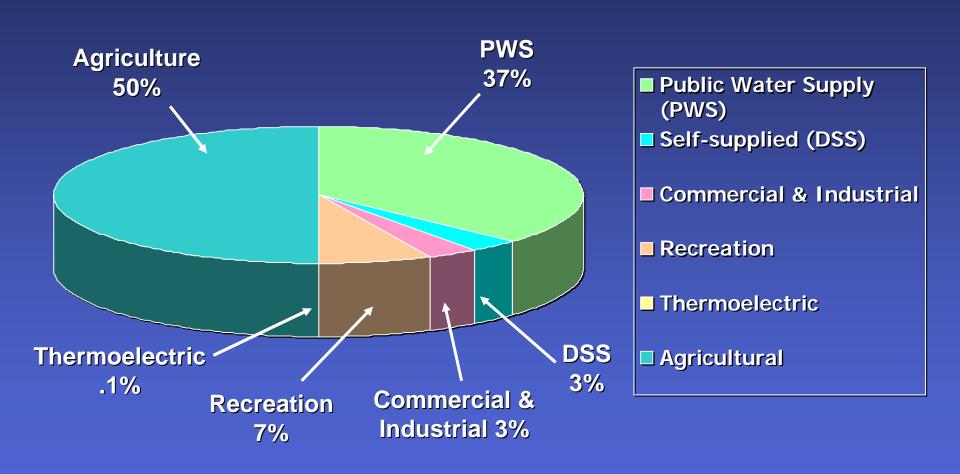
Cross-Section of LEC Aquifers



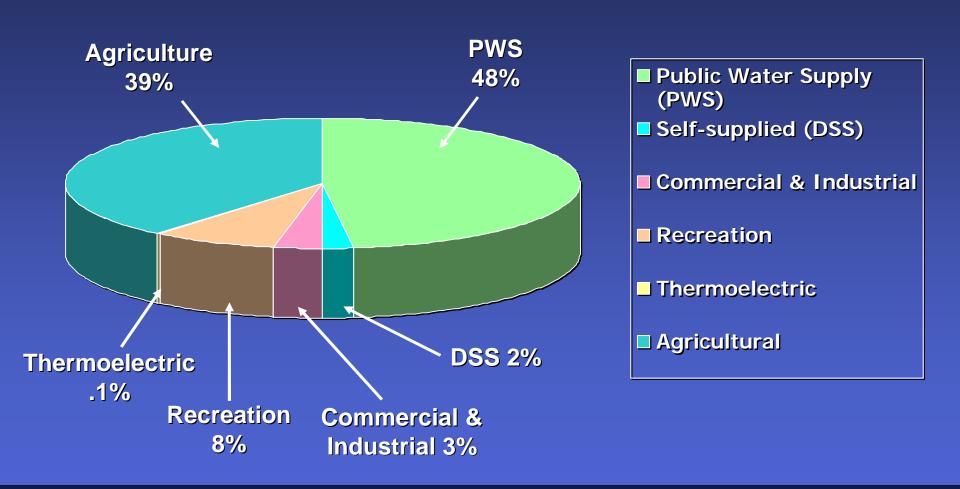
Fresh Water Demand by WMD, 1995 and 2020 (million gallons per day)



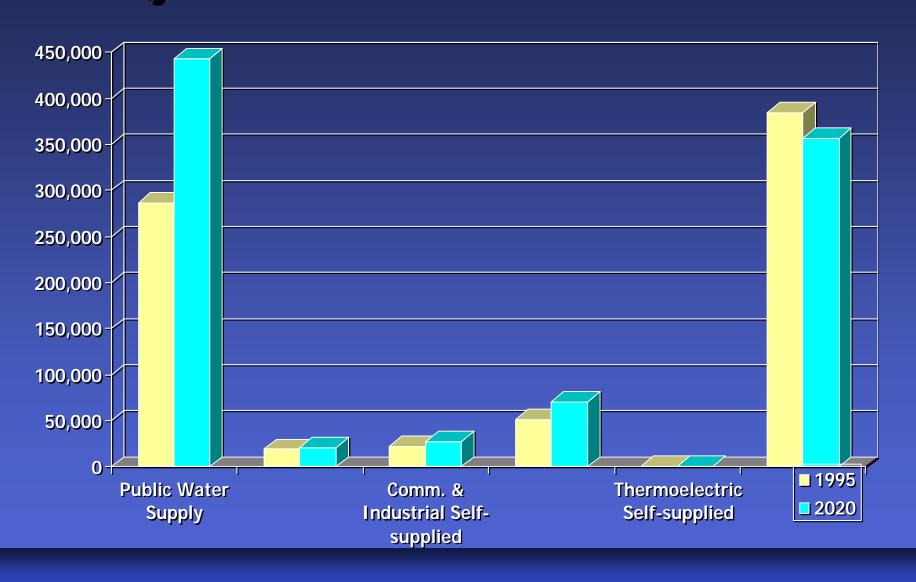
Distribution of Total Estimated Water Demand 1995 for LEC



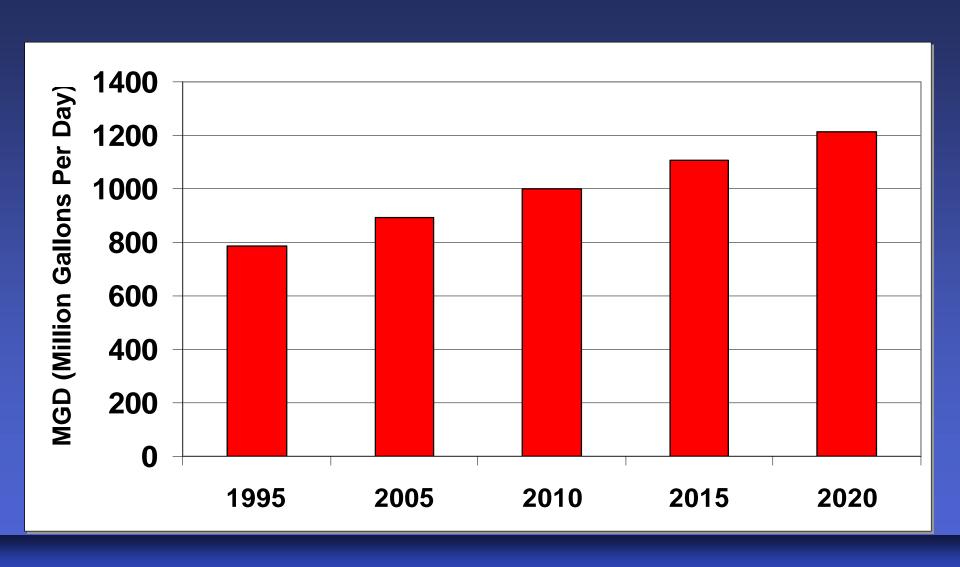
Distribution of Total Projected Water Demand 2020 for LEC



Comparison of Estimated 1995 and Projected 2020 Water Demands for LEC



LEC Public Water Supply Demands



Estimated 1995 and Projected 2020 Public Water Supply Populations for LEC

County	1995 Public Water Supply	2020 Public Water Supply	Percent Change
Palm Beach	809,088	1,577,014	95 %
Broward	1,380,362	1,936,658	40 %
Miami-Dade	1,989,282	3,334,013	60 %
Monroe	78,850	112,800	43 %
Total	4,257,582	6,960,485	63 %

Key Demand Assumptions

Component	2005	2010	2015	2020		
LEC PWS demands	891 mgd	999 mgd	1107 mgd	1215 mgd		
PWS wellfield distribution	Utility preferred (modified)					
EAA irrigated acreage	501,700 acres	460,800 acres	437,760 acres	437,760 acres		
EAA Demand	371,000 acre feet	351,000 acre feet	332,000 acre feet	328,000 acre feet		
Other Lake area Irrigation demands	217,000 acre feet	234,000 acre feet	332,000 acre feet	328,000 acre feet		
Everglades	Rain-driven					
Caloosahatchee Estuary	Environmental target					
St. Lucie Estuary	Environmental target					

Comprehensive Everglades Restoration Plan

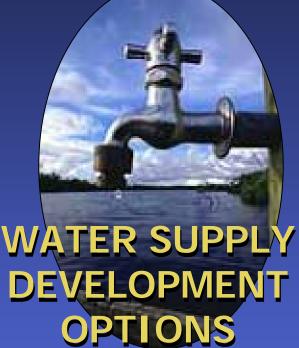
- **Aquifer Storage and Recovery**
- Surface Water Storage Reservoir
 - Stormwater Treatment Areas
 - **Seepage Management** ----
 - Removing Barriers to Sheetflow
 - Operational Changes -
 - Reuse Wastewater



Conservation

Wastewater Reuse

New Wellfields



Aquifer Storage & Recovery

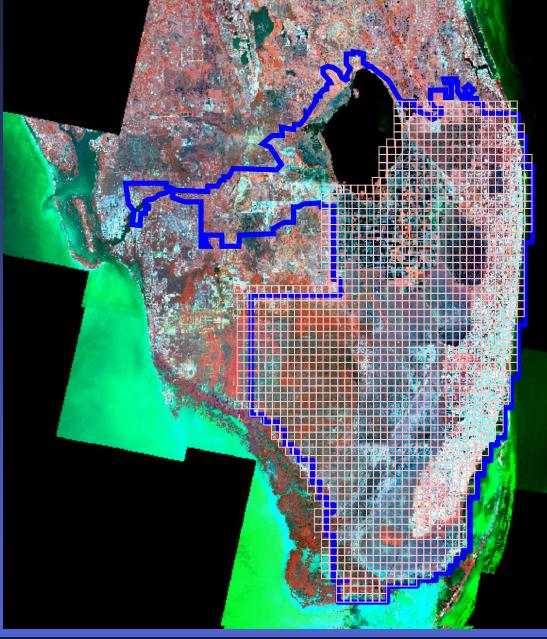
Utility Interconnects DEVELOPMENT

Surface Water Reservoirs

Floridan Aquifer System

Ocean Water

SFWMM Boundary and Grid





Hydrologic Performance Measures Indicator Regions Lake Okeechobee Stage Duration Curves File Edit View Go Communicator Help 50BSR AD13F 2010 2015 Netsite: http://www.sfwmd.gov/org/pld/proj/lec2020/index.html sfwmd.gov Lower East Coast Regional Water Supply Plan ➤ What's New About the Performance **Hydrologic Performance Measures** Base Case & Alternative Descriptions Lake Okeechobee ► Model Input Estuaries PWS Distribution -Other L.O. Service Area interactive program Everglades Ag. Area North Palm S. A. ► Planning Documents LEC Service Area 1 LEC Service Area 2 LEC Service Area 3 RELATED LINKS: WCA-1 (LNWR) WCA-2 ▶ Web-site Feedback WCA-3 ► Contact Information Everglades Nat. Park - SFWMD Boundary Areas outside of Plan boundary with signifi-cant relationship to the LEC 2020 Plan. who to contact • site map • search • webmaster • site design • home • email Use of information herein constitutes acceptance of our disclaimer Everglades Agricultural Area Document: Done Water Restrictions in LEC Mean Annual EAA/LOSA Supplemental Irrigation: Demands and Demands Not Met for the 1965 - 1995 Simulation Period Serv. Area MONTHS Run 44 95BSRR 33 19 2010R 21 21 14 2015R 2020R 14 005R 2010R CENT LOSA Area 95BSRR 38 21 38 12 2005R 44 44 14 20 15 27 2010R 19 12 2020R 010R

Incremental Modeling Results for LEC Natural Areas

Area	1995 Base	LEC 2005	LEC 2010	LEC 2015	LEC 2020	CERP 2050	
Lake Okeechobee							
Caloosahatchee Estuary							
St. Lucie Estuary							
Lake Worth Lagoon							
Holey Land WMA							
Rotenberger WMA							
Loxahatchee NWR (WCA-1)							
WCA-2A							
WCA-2B							,
WCA-3A N.E.							\star
WCA-3A N.W.							
WCA-3A Eastern							
WCA-3A Central							
WCA-3A South							
WCA-3B							\bigstar
Shark River Slough							
Rockland marl marsh							
Western Fla./Whitewater Bays							
North Biscayne Bay							
Central Biscayne Bay							
Southern Biscayne Bay							

Years With Water Restrictions

Service Area	1995 Base	2005	2010	2015	2020 LEC	2050 CERP
North Palm Beach	10	6	3	2	2	2
Palm Beach	12	5	3	2	2	2
Broward	23	16	11	12	13	5
Miami-Dade	8	10	6	5	4	4

Target is 3 years out of 31 years

Lake Okeechobee Service Area Water Restriction Information

	1995 Base	2005	2010	2015	2020 LEC
Number of water years with significant shortages	5	5	6	3	1
Number of water years with shortages in one or more months	9	7	9	6	4
Total months of shortages	37	35	36	21	12

LEC Summary

- Incremental modeling shows gradual improvements over time for Urban Water Supply
- Typically water use service areas for LEC meet 1:10 level of certainty by 2020 per state planning goal
- Agriculture essentially meets 1:10 level of certainty by 2015
- LEC Plan assumed that proposed water resource development projects would be constructed on schedule
- LEC Plan also recognized that water supply development projects would be needed in the interim

LEC Water Supply Plan 46 Recommendations

- Water Resource Projects CERP
- Alternative supplies
- Conservation
- Environmental protection
- Operational changes

2005 LEC Plan Update

- Plan update by December 31, 2005
- **2005 2025 time period**
- Consistent with Initial CERP Update
- **LEC Plan 2020 population is 7,139,453**
- **■** BEBR 2025 projection is 7,263,262
- **Increase of 123,809 people (1.7%)**

Issues to Address in Update

- Significant water from the regional system for future population growth may not be available in advance of CERP
- CERP projects providing additional urban water may not be operational for 10-20 years.
- Some CERP project completion dates have been adjusted.

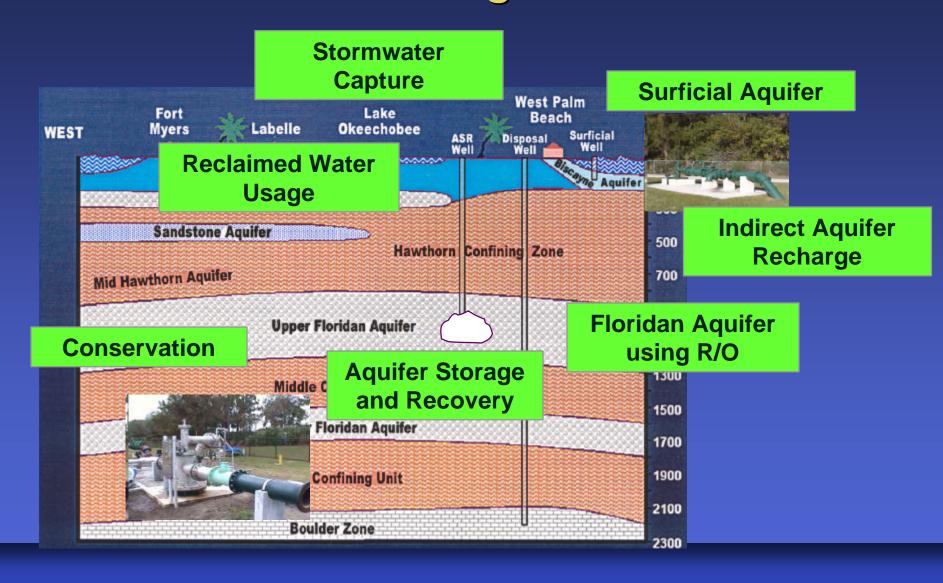
Implication of LEC Plan on Consumptive Uses

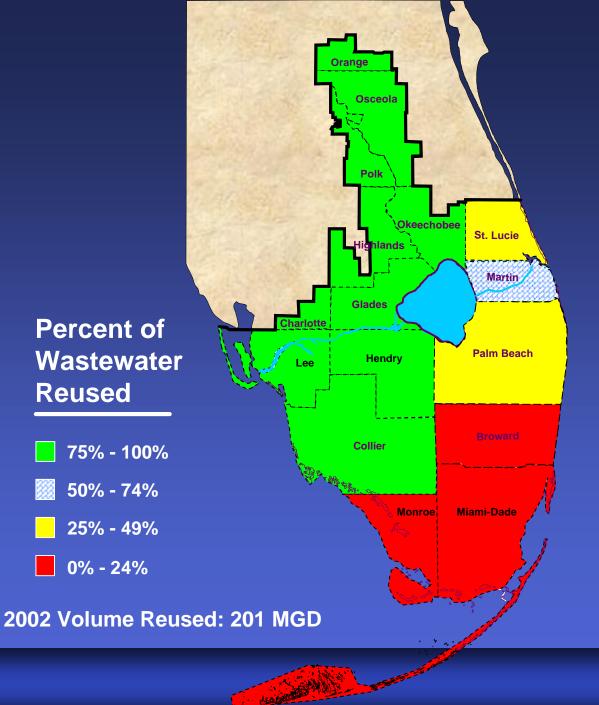
- Future limits on regional water
- Minimum Flows and Levels (MFLs) in the Everglades are not yet being met
 - Recovery plan limits regional water availability
- Reservations of water for the environment are required to be established for CERP under state law
- Uncertainties of water resource development technology and funding

Integrated Water Resource Management Strategies Should be Considered in the Interim by Urban Water Utilities, IF:

- Utilities are seeking significant increases in allocation from local or regional sources at the time of consumptive use permit renewal
- Utilities demand projections are significantly greater than LEC assumptions
- Utilities propose an increase in allocation that has a direct or indirect impact on minimum flows and levels

Integrated Water Resource Management Strategies





Reused

50% - 74%

25% - 49%

0% - 24%

SFWMD Reclaimed Water **Utilization**

The Advantages of Alternative Water Supplies To Utilities

- Longer term permits
 - Historic uses without resource problems
 - New non-regional water source
- No cutbacks for alternative supplies during water shortages
- Reduced revenue impacts during shortages
- Reliable source of water supply
- Alternative disposal method for waste water

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